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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/249,100	02/12/1999	TAKUO HIBI	Q053271	9567

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SUGHRUE MION ZINN MACPEAK & SEAS
2100 PENNSYLVANIA AVENUE N W
WASHINGTON, DC 200373213

EXAMINER

NGUYEN, NGOC YEN M

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 12/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

cb37

Office Action Summary

Application No.

09/249,100

Applicant(s)

HIBI ET AL.

Examiner

Ngoc-Yen M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-76, 79, 82-85, 87 and 88 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-76, 79, 82-85, 87 and 88 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 18, 2003 has been entered.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 76, 79, 81-85, 87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grätzel '231, optionally in view of Bankmann et al (5,387,726) or Umemura et al (4,177,161).

Grätzel '231 discloses a catalyst comprising highly dispersed Ru/RuO_x (x less than or equal 2) on TiO₂ carrier (note Example 1 and claim 1). Grätzel '231 further discloses that in the case of TiO₂, mixture of anatase and rutile forms work very well as support material, however, pure anatase and pure rutile have also yielded good results when used in conjunction with the mixed ruthenium as a catalyst (note column 3, lines 26-31). Thus, it would have been obvious to one of ordinary skill in the art at the time

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the invention was made to use pure rutile form as the support for the catalyst of Grätzel '231 because the rutile form have yielded good results.

For the product-by-process limitations, any difference imparted by the product by process limitations would have been obvious to one having ordinary skill in the art at the time the invention was made because where the examiner has found a substantially similar product as in the applied prior art the burden of proof is shifted to the applicant to establish that their product is patentably distinct not the examiner to show that the same process of making, see *In re Brown*, 173 U.S.P.Q 685, and *In re Fessmann*, 180 U.S.P.Q. 324.

Grätzel '231 does not specifically disclose the amount of "OH" in the titanium dioxide carrier, however, the instant claims are drawn to a final product, not the raw material, i.e. the titanium dioxide carrier or the process of making the catalyst. This limitation can be considered as a product-by-process limitation, see *In re Fessmann*, *In re Brown* as stated above. There is no difference seen between the product of Grätzel '231 and the claimed product. It appears that the OH groups are inherently present on the titanium oxide (note instant application, page 46, lines 12-14), and in the event that the concentration of the "OH" group in the titanium oxide carrier used in Grätzel '231 is not the same as the required range, Grätzel '231 does disclose that the catalyst product is calcined at 375°C for 12-18 hours, which condition is similar to that disclosed in the instant application to adjust the OH concentration (note page 50, first full paragraph or page 123, lines 7-13, which stated that the OH group in the titanium carrier is eliminated by heating, and the content of the OH group can be controlled by changing the calcination temperature and calcination time), such calcination condition would render the titanium dioxide carrier in the catalyst product to have the similar concentration of OH group as required in the instant claims. Even if the amount of OH groups in the

carrier of Gratzel before forming the catalyst may be different than that required in the instant claims, however, the instant claims are drawn to the catalyst final product, not the carrier intermediate product. There is no evidence on record to show that after the step of forming the catalyst, the claimed catalyst still maintains the same amount of OH groups.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to optimize the process condition in Grätzel '231 and in turn the amount of "OH" in the catalyst to obtain the best results, i.e. a catalyst suitable for hydrogenation processes.

Optionally, in the event that the instant claims require that the titanium dioxide carrier before it is used to make the catalyst has the claimed amount of OH group, Bankmann '726 or Umemura '161 can be applied to teach that it is conventional in the art to obtain rutile titanium oxide by calcining at 700°C for 5 hours (note Bankmann '726, lines 18-22) or 670-900°C for 30 minutes to 2 hours (note Umemura '161, lines 8-34).

Since Grätzel '231 teaches that the titanium oxide used should be in rutile form, it would have been obvious to one of ordinary skill in the art to calcine the titanium oxide to the temperature and for the amount of time as suggested by either Bankmann or Umemura to convert the titanium oxide to rutile form. These calcination condition would naturally adjust the amount of OH group on the titanium oxide to the claimed range.

Claims 76, 79, 81-85, 87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buysch et al (6,001,768), optionally in view either of Bankmann or Umemura.

Buysch '768 discloses a supported catalyst containing, a platinum, a platinum metal compound or a complex containing a platinum metal compound on a support

comprising one or more oxides of the metals Ti, V, Mn, Cr, Fe, Co, Ni, Cu, La, Nb, Mo, Pb, the rare earth metals having the atomic numbers from 58-71 and the actinides having the atomic numbers 89-92 (note claim 1).

The support can be TiO_2 , preferably in the rutile form (note column 3, lines 56-60). The platinum metal can be Pd, Pt, Ir, Ru or Rh (note column 4, lines 34-36). Buysch '768 further discloses that it is possible to fix one or more platinum metals by precipitation with a base. Suitable bases are NaOH, LiOH, KOH, etc. (Note column 5, lines 24-55). The catalyst is prepared by methods which are known to those skilled in the art. Thus, solutions of one or more of the platinum metals specified can be applied to the catalyst support (note column 5, lines 16-23), drying (note column 6, lines 22-28), calcining (note column 6, lines 29-45). The calcining step fairly suggests that the platinum metal is present in the catalyst in an oxide form. The calcination is carried out in air, in vacuo or in a stream of gas at from 100-800°C and the calcination time is generally few hours, for example 0.5 to 50 hours, preferably from 1 to 30 hours (note column 6, lines 29-45). The overlapping ranges of the time and the temperature would give the titanium dioxide carrier the same OH concentration as required in the instant claims.

The difference is Buysch '768 does not specifically disclose an example with rutile titanium oxide as the support and ruthenium oxide as the catalyst material, i.e. the number of embodiments disclosed in Buysch '768 is too large for anticipation.

It would have been obvious to one skilled in the art to select any combination among the specifically disclosed compounds, *Merck & Co. Inc. v. Biocraft Laboratory Inc.* 10 USPQ 1846.

Optionally, Bankmann or Umemura can be applied as stated above.

Applicant's arguments filed July 18, 2003 have been fully considered but they are not persuasive.

The argument has been fully considered, see advisory action (mailed 4/2/03).

Applicants argue that the supported RuO_2 cannot be highly dispersed since the amount of OH groups on the TiO_2 is too small.

This argument is not commensurate in scope with Applicants' claims. It should be noted that Applicants' claims only require a catalyst with ruthenium oxide being supported by titanium oxide carrier, there is no requirement as to the amount of ruthenium oxide or how finely dispersed the ruthenium oxide has to be on the support material. There is no sufficient evidence to show that the high amount of OH group on the titanium oxide carrier would automatically result in "highly dispersed" ruthenium oxide.

Applicants argue that there is a difference in the catalytic activities and this is caused by the difference of the amount of OH group bound to Ti of the TiO_2 used as a raw material for preparing the catalyst.

Applicants' claims are drawn a catalyst product, not a process for using the catalyst. Even if there is a difference in the catalytic activities, such difference may only be for certain process, not all the processes of using the claimed catalyst, thus, there is no sufficient evidence on record to show that the structures of the claimed process and that of the applied reference are different from each other because the catalytic activities are different from each other.

The other rejections are maintained for the same reasons as stated above.

All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the

grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Ngoc-Yen Nguyen whose telephone number is (703) 308-2536. The examiner is currently on a part time schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Stanley Silverman, can be reached on (703) 308-3837. The fax phone number for this Group is (703) 872-9311 (for OFFICIAL After Final amendment only) or (703) 872-9310 (for all other OFFICIAL faxes). UNOFFICIAL fax can be sent to (703) 305-6078.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

N. M. Nguyen
12/4/03


N. M. Nguyen
Primary Examiner
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